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Alan Prouty
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Dear Alan,

Enclosed you will find the Agencies' Comments on the Draft Feasibility Study Technical Memorandum #2 (FSTM#2).

Please respond to these comments from the Agencies by November 27, 2020.

If you have any questions, please contact me at 208-236-7572.

Sincerely,

ARTHUR BURBANK
Environmental Engineer

Enclosure

cc: Jeffery Hamilton; Simplot, Pocatello
Ron Quinn; Simplot, Smoky Canyon Mine
Burl Ackerman; Simplot, Boise
Andy Koulermos; Formation Environmental, Boulder
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Ralph Oborn; IDEQ Pocatello
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Susan Hanson; Shoshone-Bannock Tribes, Fort Hall
Rick McCormick; Jacobs, Boise
Jennifer Crawford; USEPA Region 10

Agencies' Comments on the Smoky Canyon Mine RI/FS

Technical Memorandum #2 (April 6, 2020)

General Comments:

GC-1 It would be helpful to have figures or maps for each cover alternative, showing the panels, key spring areas, Water Treatment Plant (WTP), seeps and riparian areas, and other important features referred to in the document, in order to better understand which areas would be addressed by a particular alternative.

GC-2 How do the alternatives meet the Remedial Action Objectives (RAOs)? RAOs are achieved by concentration reductions, but there is little to no discussion about this. The discussion in the text is focused on reductions in selenium loading.

GC-3 What criteria were used to select "target areas" for addressing infiltration? Why were travel timeframes to Hoopes Springs selected? If the focus is long-term effectiveness and permanence of remedies, all source areas should be addressed.

GC-4 There seems to be little site-specific data to support the capillary break alternative. Were analyses conducted with Smoky Canyon data to determine if this would be effective? How similar is Blackfoot Bridge to Smoky Canyon in terms of elevation, aspect, moisture, etc.? Has the 42% of moisture that percolates through the filter fabric been put into the updated GW model? What are the estimated concentrations that emanate from Hoopes Springs using this alternative?

GC-5 Do Dinwoody and Salt Lake Formation have the same properties such that they are interchangeable in constructing covers? If not, how do you select which material to use? If not, how can the screening evaluation be conducted as described in the FSTM #2? Do they have different levels of effectiveness in preventing infiltration?

GC-6 Do any of the alternatives meet Applicable or Relevant and Appropriate Requirements (ARARs)? It is unclear from the text in the document, as there is little discussion on action-specific, location-specific and chemical-specific ARARs. There are more ARARs to consider than the selenium surface water criteria.

GC-7 The Preliminary Remediation Goals (PRGs) were identified in FSTM #1. However only a final chosen value was provided in Table 3-3, and in some cases a range was listed instead of clear summary numerical identification of all factors used in determining the final PRG. In FSTM #2, please add an expanded PRG Table 3-3 to the document, building on Table 3-3 from the FSTM #1. This updated Table 3- 3 would include specifics for all contaminants of concern (COCs) with a hazard quotient (HQ)>1), ARAR criteria value (if available), naturally occurring COC background concentration (as applicable), and the risk-based criteria. Including these values in one table allows for

clear identification and documentation of the chosen PRG for remedy evaluation and begins the specific incorporation of background values to the FS process. The added/updated Table 3-3 should also be referenced throughout the document during discussion of alternatives and PRGs.

GC-8 FSTM #1 identified several COPCs above screening values; however, these COPCs were not considered in the evaluation of the alternatives because collocated samples concentrations of selenium were higher than the COPCs. FSTM #2 needs to demonstrate that all COPCs identified in FSTM #1 for each media behave similar to selenium for the proposed remedial technologies.

GC-9 FSTM #1 identified arsenic as a COPC exceeding benchmarks for human health through drinking water for the Native American, recreational camper, and hypothetical camper receptors. Although the MCL is being used as a PRG for the cleanup of the site for surface and groundwater, the FSTM #2 should acknowledge that IDEQ is in the process of updating the arsenic human health aquatic life criterion[1] and that arsenic aquatic life criterion applies for surface waters at the site.

GC-10 Section 2: Inclusion of different types of covers in the alternatives for different media (groundwater, surface water, and solids and soils) is unusual and confusing. Although covers would have benefits for groundwater and surface water, they are often viewed as most directly applicable to solids and soils media. Feasibility Studies (FSs) do not generally have the same technology, applied in the same areas, considered for multiple media. One way to mitigate repetition, overlap, confusion, and potential conflicts between selections of different cover alternatives for different media, would be to use a generic description for a cover component in the groundwater and surface water alternatives, and leaving the evaluation of the different types of covers and locations for implementation to the solids and soils alternatives. For instance, Alternative WG-4 could be changed to something like "source control using covers (see Solids and Soils alternatives, Section X), ICs, and MNA", and then WG-5 through 7 could be deleted. Similarly, for the Surface Water (SW) alternatives. (Note: the approach for covers suggested above is actually already employed in FSTM#2 for the rock covers over seep/riparian areas, where that is mentioned but not nominally included in the WG and SW alternatives, but is only actually included as a component of the Soil (S) alternatives. This comment is suggesting that the other types of covers be handled in the same fashion.)

GC-11 Section 2: Another confusing aspect of including cover components in the alternatives for multiple media is: WG and SW alternatives (i.e., WG-4 through -7 and SW-2 through -5) specify covers on the target cover areas shown in Figure 2-1. In contrast, the S alternatives (S-3 and -4) specify covers on the uncovered ODA areas shown in Figure 2-18. The areas depicted in Figure 2-1 (D-1, D-ODA, E-1n) and Figure 2-18 (A-ODA, A-2, D-1, D-2, D-ODA) overlap considerably but not completely. If all these areas contain exposed materials that serve as a source and/or present a contact risk, why not simply

include all areas of exposed contaminated material shown in both figures as the areas to be covered?

GC-12 Section 2: Please consider a different approach to structuring the document. The approach to presentation/screening of media alternatives is confusing. Consider some reorganization of the document based on the premise that mitigating source material exposure is an overriding theme paramount to remediating contamination of other media. For example, an optional approach might be:

a. Add subsection: Common remedial features of the assembled media alternatives (with the exception of No Action). Describe common remedial features/tools that will be applied to all media alternatives (e.g. Land use controls; Institutional Controls; Long term O&M monitoring and Maintenance; Revegetation, etc.). Then refer back to this section as media alternatives are presented, described and evaluated.

b. Assume that source controls (Containment Options over ODAs and contaminated soils) will be used in conjunction with other media Alternatives and will influence the success of all other alternatives. [Prevents precipitation, runoff or snowmelt from infiltrating and moving through contaminated ODA's, mined areas and soils]

c. Start Description and Screening of Media Alternatives (Sec. 2.3) with:

    i. ODA Solids and Soils Alternatives* (primary Source Material) and describe the primary source control options (containment) to be screened/evaluated.

        1. 5 foot Dinwoody or Salt Lake Formation/Chert Covers over ODA's

        2. 5 foot Dinwoody or Salt Lake Formation/Chert Covers over uncovered areas

            a. Capillary Covers

            b. Enhanced Dinwoody Covers

            c. Geomembrane Covers

            d. Rock Covers on Soils in Seep and Riparian Areas

            e. Note: * with Run-on/run-off controls

        3. Groundwater Alternatives

            a. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils Alternatives)

b. Wells Formation

i. Monitored Natural Attenuation (MNA) and ICs

ii. GW recovery and treatment

c. Alluvial Aquifer

i. MNA

ii. Permeable Reactive Barriers

iii. In-situ Treatment of Alluvial plumes by injection

iv. GW recovery and treatment

ii. Surface Water Alternatives

1. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils Alternatives)

2. In-situ Biological Treatment of Source Area Seepage (Wetlands Bioreactor)

a. Bioreactor Treatment – (Mine influenced Seeps/springs collected to lined ponds, then piped to above ground bioreactor cells)

3. Treatment Plant - (Mine influenced seeps/springs collected to lined ponds, then piped to treatment plant.)

iii. Sediment and Riparian Soils Alternatives

1. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils Alternatives)

a. Monitored Natural Recovery (MNR)

2. Sediment Traps/ Basins, and MNR

3. Removal of contaminated Stream Sediments and Riparian soils with onsite disposal

iv. ETC

GC-13 Institutional Controls (ICs) generally should not be relied on as a singular alternative to contaminated groundwater. The recommended ICs as the sole remedy for alluvial groundwater would not meet the stated RAOs (reducing concentrations to below MCLs): or PRGs (MCL). In addition, there are consistency issues with alternatives. Section 2

calls AG-3 ICs and MNA, but Section 4 calls AG-3 ICs only while the tables call it ICs and MNA. The final recommend alternative is ICs only. Revisit the recommended alternative.

GC-14 More discussion is needed regarding the effectiveness in the screening alternative sections. For example, the Wells Formation screening effectiveness evaluation discussion on the reduction on selenium releases and thus concentrations in the Wells Formation is too ambiguous at this stage. Specific discussion on the alternatives' effectiveness to reduce concentrations to meet PRGs and RAOs at a reasonable time frame needs to be provided.

GC-15 Use of the term "rock covers" is confusing. It is assumed that what is meant is the chert/limestone cover process option that has been always discussed previously. It is unclear why a change in terminology has occurred. Rock covers are not included in the "profiles of covers" figures.

GC-16 Sections 3.0 and 4.0: The Detailed and Comparative analysis text and tables are exceedingly long and, the length makes them somewhat tedious to read. There is a lot of redundancy, but some important points are made in both text and tables. The Agencies suggest looking for ways to make this more succinct—for instance, capture all the salient points in one (text or tables) while making the other much briefer.

GC-17 FSTM#2 alternatives describe revegetating ODAs with grass/forb species. The risk assessments determined that uptake into and consumption of plant tissue is a significant contributor to exposure. It is important to identify the plant species mix that would be used to understand whether potential cap thicknesses are adequate for reducing COC uptake into plant tissues. Information that describe minimum, typical, and maximum rooting depths of planned seeded grass species could be added. The same information is necessary for forb species that would be included in the revegetation program.

GC-18 There is no mention of the prevention of succession of selenium accumulator or hyper-accumulator plant species. The FSPS reports at Conda Mine describe that 80 percent of alfalfa roots occur in 4 to 6 feet of soil with depths some reportedly reaching over 100 feet while gumweed roots extend to 6.5 feet. This information is important to add for consideration of a potential eradication program for deep rooting accumulator and hyper-accumulator species.

Specific Comments:

SC-1 **Page 1-2, Section 1.1, third bullet:** Please clarify in this section that ARARs identified in FS Tech Memo #1 are subject to change and will be finalized in the ROD.

SC-2 **Page 1-2, Section 1.2:** This early section might be a good place to emphasize that in the alternative screening and detailed evaluation of alternatives, ratings against evaluation criteria are media-specific. For example, the cost of AG-4 is rated high at $444K compared

to other AG alternatives, while it is not high at all compared to that of, say, SW-6 ($38M) or at WG-7 ($74M).

SC-3 **Page 1-2, Section 1.1, third bullet:** Please add to footnote that DEQ "will evaluate all representative whole-body and muscle data to determine compliance with this criterion element" (IDAPA 58.01.02.257.02) and that this will be done under forthcoming guidance on implementation of the selenium aquatic life criteria.

a. *IDAPA 58.01.02 states: Note: "In 2008, Idaho adopted 10 µg/L as its CWA arsenic criterion for both exposure through fish consumption only and exposure through drinking water+fish consumption, choosing the SDWA MCL due to concerns about background levels that exceed EPA's 304(a) criteria (docket 58-0102-0801). EPA approved this action in 2010. In June 2015, Northwest Environmental Advocates challenged EPA's 2010 approval. Court remanded action back to EPA. On September 15, 2016, EPA disapproved Idaho's adoption of 10 µg/L. Neither EPA nor the state of Idaho has promulgated replacement criteria. For more information, go to http://www.deq.idaho.gov/epa-actions-on-proposed-standards."*

SC-4 **Section 2.0:** Throughout this section, under the Effectiveness evaluation, the statement, *"There are no environmental risks associated directly with Wells Formation groundwater."* is consistently made. The Agencies are not sure this is true, please explain and clarify. Wells Formation (WF) ground water quality is influenced by precipitation and snow melt infiltrating the mine ODAs. WF ground water then discharges at the Hoopes springs with high concentrations of selenium daylighting as contaminated surface water (above aquatic criteria standards) creates an environmental risk.

SC-5 **Section 2.0 Initial Screening for Alternatives**: Under the text summary criteria for *Effectiveness*, it is not clear that the EPA guidance categories of: Overall protection of human health and the environment; Compliance with ARARs; Short-term effectiveness (during the remedial construction and implementation period); Long-term effectiveness and permanence (following remedial construction); Reduction of toxicity, mobility, or volume through treatment; were addressed during the evaluation for all media alternatives. Please make text summary as comprehensive as Table 2-2.

SC-6 **Page 2-1, Section 2.0, first paragraph, last sentence:** Please fix Table 2-1 to match Tables 5-1 to 5-3 in FSTM #1. Please ensure all the technologies that passed the screening in FSTM #1 are carried into FSTM #2, and no new technologies or alternatives that were not discussed in FSTM #1 are not introduced into FSTM #2.

SC-7 **Page 2-1, Section 2.1:** It would be helpful to have a section before 2.1 that lists and describes the remedial alternatives (e.g., "development") before describing the "screening" process and criteria.

SC-8 **Page 2-1, Section 2.1, second paragraph:** Please include the entire description of the evaluation criteria from USEPA 1988 instead of an edited version of paragraphs (see

Sections 4.3.2.1, 4.3.2.2, and 4.3.2.3 of the RI/FS Guidance). For the cost criterion, please include O & M costs.

SC-9 **Page 2-2, Section 2.2:** This section seems out of place in this chapter. It may be better placed in Chapter 1, before 1.3, as an update to RI efforts.

SC-10 **Page 2-3, Section 2.3:** In concert with an earlier comment, please delete "Description and" in the title.

SC-11 **Page 2-3, Section 2.3, first paragraph, first sentence:** In conjunction with the previous comment, please delete "descriptions of the media-based remedial alternatives and".

SC-12 **Page 2-4, Subsection 2.3.1, Remedial Alternatives for Wells Formations Wells:** An RAO for Wells Formation groundwater is to reduce or eliminate arsenic and selenium within a reasonable time frame and given the circumstances at the site. It would be helpful for there to be a discussion included about what a reasonable time line is and what circumstances of the site would impact remediation efforts. It appears to be a significant subject, however, it is unclear where such information is presented.

SC-13 **Page 2-4, Subsection 2.3.1, Remedial Alternatives for Wells Formations Wells**: Per the second paragraph on Page 2-4, "*the rate of selenium release after mining depends on location specific conditions; primarily the setting, areal extent of the overburden and the cover placed on it. The relative magnitude of selenium loading to Wells Formation groundwater is proportional to net infiltration rates through overburden*." Based on these comments, the Agencies would expect the design of the cover system to be considered crucial and more emphasis placed on it and the system components within this Technical Memorandum (TM). There is a considerable lack of information within this TM of not only the geotechnical criteria of the proposed "capillary" cover system but also the geotechnical properties of cover materials. More information and design criteria should be included for the various components of the cover system, including a discussion that the proposed "capillary" cover system provides equivalent protection to other waste type cover systems intended to greatly reduce infiltration. Please refer to the Wyoming Department of Environmental Quality Solid and Hazardous Waste Division Solid Waste Guideline #19, "Hydrologic Evaluation of Landfill Performance (HELP) Model."

SC-14 **Page 2-4, Section 2.3.1, Identification of "Target Cover Areas":** Please add a discussion of the specific decision criteria used for determination of which areas are included for cover remediation and which are not proposed for covers (i.e. Panel A). A table with the all contaminated soil areas listed, decision criteria, specifics regarding loading rates, groundwater travel times and proposed reduction percentage / concentration needs to be identified for quantified assessment of the target areas for cover as included in FSTM2.

SC-15 **Page 2-4, Section 2.3.1, first paragraph, first sentence:** Are hypothetical residents on private lands the only domestic users of ground water for drinking water? Is the culinary well at Smoky Canyon Mine considered?

SC-16 **Page 2-4, Section 2.3.1, second paragraph:** What criteria were used to select "target areas" for addressing infiltration? Why were travel timeframes to Hoopes Springs selected?

If the focus is long-term effectiveness and permanence of remedies, all source areas should be addressed.

SC-17 **Page 2-4, Section 2.3.1, second paragraph about target cover areas for FS covers (Figure 2-1):** Are there other areas of the site where uncovered or inadequately covered waste rock exists that are thought to have lower infiltration rates through overburden and/or are not as close to springs, which are not included in the target cover areas? If so, would those areas not eventually function as long-term sources of contaminants to groundwater and surface water? Why would such areas not warrant covers as well?

SC-18 **Page 2-4, Section 2.3, fourth paragraph:** The text states that the retained remedial technologies are capable of addressing the RAOs. Subsequent discussion in the document does not explain how the remedial alternatives meet the RAOs, which describes concentration reductions. The text discusses loading. Please revise.

SC-19 **Pages 2-4 and 2-5, WG alternatives:** Alternatives are normally developed by combining media-specific technologies into remedial options that might have a reasonable likelihood of addressing the threats at the site. ICs or MNA alone would not be adequate. EPA guidance frequently mentions that the NCP emphasizes that ICs are meant to supplement engineering controls and will rarely be the sole remedy at a site. Consequently, there seems to be little or no value of considering alternatives WG-2 (MNA only) and WG-3 (ICs only). The Agencies suggest deleting those as stand-alone alternatives.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-21 **Page 2-5, Section 2.3.1.1, third paragraph:** In addition to Alternative WG-1 not being protective of human health, it also does not meet ARARs. Please state as such.

SC-22 **Page 2-5, Section 2.3.1.1, fourth paragraph, second sentence:** How much time will it take for the mass flux of selenium to reduce and to what levels?

SC-23 **Page 2-5, Section 2.3.1.1, fourth paragraph, last sentence:** It is uncertain whether selenium concentrations will reduce over time because the No Action alternative does not implement source control. Please state this in the paragraph.

SC-24 **Page 2-6, Sec 2.3.1.2, second paragraph under Description:** Use of MNA as a component of a remedial alternative requires more effort than just conducting long-term monitoring (please see USEPA's MNA guidance documents).

SC-25 **Page 2-7, second paragraph, and Figure 2-5 and 2-6:** The discussion of the meaning of Figures 2-5 and 2-6 is not likely to be understood by most readers, unless they are familiar with the Hay et al. reference. Please provide further explanation in the text. Also, the figures should be able to stand alone; please add notes to explain what the diagonal lines represent.

SC-26 **Page 2-7, Sec 2.3.1.2, Effectiveness Screening Evaluation:** Existing data indicates that MNA is not significantly influencing selenium concentrations in the Wells Formation (Tetra

Tech 2008). Please elaborate on the research indicating that the probability of conditions changing to favor MNA as a significant remedial process are influential enough to retain it as a viable alternative. No mention was made of any study results illustrating how EPA's defining criteria for MNA were met. Please include.

SC-27 Page 2-7, Section 2.3.1.2, second paragraph: Please state whether MNA alone will meet ARARs.

SC-28 Page 2-7, Section 2.3.1.2, last paragraph: Please include the costs for long-term O&M.

SC-29 Page 2-8, Section 2.3.1.2, first paragraph, third sentence: How is WG-2 different than the effectiveness of WG-1 and WG-3?

SC-30 Page 2-8, Section 2.3.1.3, first paragraph: IC implementation is not limited to Simplot owned land in Sage Valley. If necessary, restrictions can also be placed on Forest Service land.

SC-31 Page 2-8, Section 2.3.1.3, last paragraph: How do ICs meet ARARs? Please revise.

SC-32 Page 2.8, Section 2.3.1.3 Alternative WG-3 and Section 3.3.3 AG-3 – Institutional Controls (ICs): ICs should not generally be identified as a stand-alone alternative. ICs can be used for short-term and long-term use during the RI/FS and then after only as a component of the final remedy. As identified in the NCP § 300.430, section iii (D): "EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy"

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-33 Page 2-9, Section 2.3.1.4: What is actually being proposed with this alternative WG-4? Is it a 5-ft thick layer of Dinwoody material or Salt Lake Formation/Chert Covers? How do the geotechnical properties of Dinwoody compare to Salt Lake Formation material? These should technically be two different sub-alternatives; unless the materials are identical. Is this cover not considered a "capillary" cover also? This is a simple evapotranspiration cover system with a capillary break (coarser graded material).

SC-34 Page 2-9, Section 2.3.1.4, first paragraph: Is the purpose of including this type of cover to provide an assessment of a cover type that is similar to the one constructed at the Pole

Canyon ODA? The ODA cover was intended to significantly reduce infiltration and subsequent contamination of groundwater.

SC-35 **Page 2-9, Subsection 2.3.1.4:** More information is needed for the proposed two alternatives under this subsection. It appears that soil material will be placed over coarser grained material, and the soil will be seeded. More geotechnical information needs to be provided and compared.

SC-36 **Page 2-9, Section 2.3.1.4, last paragraph:** Is infiltration a concern for drainage features over waste? Please explain why infiltration is not addressed in these drainage features.

SC-37 **Page 2-9, Section 2.3.1.4, second paragraph:** Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same reduction in infiltration?

SC-38 **Page 2-9, Section 2.3.1.4, first paragraph, Target Cover Areas:** How and where were target cover areas determined? The target cover areas need to be determined through agreement not assumed and stated. Many of the source areas identified in Section 2.2, second paragraph are not addressed. Why?

SC-39 **Pages 2-9 through 2-17, Alternatives WG-4 through WG-7**: Why do all the different cover alternatives have the same effectiveness ranking of "moderate to high" when they are said to reduce infiltration by widely varying percentages (29%, 58%, 95%, and 100%)?

SC-40 **Page 2-10, fourth paragraph:** What is the basis for the assumption that infiltration would be reduced by 29%? Appendix A is not a demonstration of hydrologic performance of a cover system, rather it is a report about the fate and transport of selenium. Attachment 1 of Appendix A does discuss infiltration; please make reference to those sections here.

SC-41 **Page 2-10, Section 2.3.1.4, fourth paragraph:** Please discuss how the Dinwoody or Salt Lake formation cover would lead to meeting ARARs for ground water.

SC-42 **Page 2-11, Section 2.3.1.4, second paragraph:** What are the O&M costs? Please include those costs in the discussion.

SC-43 **Page 2-11, Section 2.3.1.4, third paragraph:** The Agencies disagree with analysis to not retain this alternative, which is similar to the Pole Canyon ODA. Please include this alternative.

SC-44 **Page 2-12, Section 2.3.1.5, fifth paragraph:** The Agencies disagree that the effectiveness of a capillary cover at 58% reduction can be rated as "high" and in the same category as enhanced Dinwoody and GCL. Please revise.

SC-45 **Page 2-13, Section 2.3.1.5, first paragraph, third sentence:** Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same reduction in infiltration?

SC-46 Page 2-13, Section 2.3.1.5, third paragraph: Please discuss how this alternative provides long-term protection and how it will meet ARARs.

SC-47 Page 2-13, Section 2.3.1.6 - Alternative WG-6 and Page 2-22 –Section 2.3.2.4 Alternative SW-4 – Enhanced Dinwoody Covers, ICs and MNA: WG-6 should be carried forward through the detailed analysis. The rationale states that performance of the Enhanced Dinwoody cover is similar to WG-7 Geomembrane, however the covers are significantly different. Inclusion of the WG-6 in the detailed selection also allows clear documentation for remedy selection at Smoky Canyon in direct comparison and consistency with other phosphate mining sites undergoing CERCLA cleanup within Southeast Idaho.

SC-48 Page 2-14, Section 2.3.1.6: Please discuss how this alternative provides long-term protection and how it will meet ARARs.

SC-49 Page 2-15, Section 2.3.1.7, first paragraph: What would the "conceptual layers be" and how much consideration was given to this alternative if the layers haven't been configured?

SC-50 Page 2-15, Section 2.3.1.7, first paragraph: One foot of what type of material is considered for geomembrane subgrade and what is the gradation? Has the membrane been appropriately sized for thickness and the need for any underlying cushion geotextile? For the 3 feet of protective liner cover, what is the gradation for that material, as well as other geotechnical properties such as hydraulic conductivity? Hydraulic conductivity, along with slope, will impact the amount of leakage through geomembrane. How much head is anticipated to be on the geomembrane? Has any modeling been performed to preliminarily evaluate the performance of the "conceptual" geomembrane design?

SC-51 Page 2-15, Section 2.3.1.6, Alternative WG-6, Subheading Screening Result: The reviewer understands the logic of excluding this alternative to reduce redundancy with WG-7 in selenium removal, but prefers to have seen this alternative moved forward. As presented to the Agencies on May 18, 2020, this alternative removes 95% of selenium (as compared to 100% and 58% with WG-7 and WG-5, respectively). The costs as presented are $107k, $195k, $240k for WG-5, -6, and -7, respectively. The Agencies acknowledge the 82% increase in this alternative; however, given the increased selenium reduction and the 124% increase (WG-7), WG-6 should be moved forward.

SC-52 Page 2-15, Section 2.3.1.6, third paragraph: The Agencies disagree with the elimination of enhanced Dinwoody covers. It should be retained as Simplot is using them at Smoky Canyon already. It has high effectiveness.

SC-53 Page 2-15, Section 2.3.1.6, Decision to not retain WG-6: The justification for screening out WG-6, said to reduce infiltration by 95%, because WG-7, said to reduce infiltration by 100% in the short-term does not seem strong – especially when the estimated cost of WG-6 is $60M versus $74M for WG-7 (nearly 20% lower).

SC-54 Page 2-16, Subsection 2.3.1.7: Erosion control measures will be required for all cover alternatives proposed within this TM. The necessity to stabilize disturbed soil should in no way be considered a hindrance or reason to not consider this alternative. The same applies to

storm water controls. Please clarify that Erosion Control Measures are not part of the justification for not selecting this alternative.

SC-55 **Page 2-16, Section 2.3.1.7**: Installing a geomembrane cover is not estimated to reduce infiltration by 100%; cover system modeling accounts for leakage through geomembrane to account for damage or errors in construction, etc. Please use an infiltration reduction number reflective of leakage potential.

SC-56 **Page 2-16, Section 2.3.1.7:** Please provide the "finite" life expectancy of geomembrane along with a source. HDPE is highly resistant to chemicals and is extremely durable. Polymer breakdown primarily occurs due to oxidation from UV, however, HDPE has approximately 2-3% carbon black content to act as anti-oxidants. Furthermore, HDPE has been shown to have minimal reduction in shear and tear strength after excessive UV exposure on the scale of 20-40 years. Lastly, the geomembrane will be buried – please provide an evaluation of the expected life of geomembrane in the intended application. Also, please specify what geomembrane is being considered.

SC-57 **Page 2-16, Section 2.3.1.7:** Constructability issues occur frequently with ET covers as well as geosynthetic covers; please clarify.

SC-58 **Page 2-16, Section 2.3.1.7, fourth paragraph**: The Agencies would rate the effectiveness as Very High, not moderate to high as there is 100% reduction in infiltration. Please revise.

SC-59 **Page 2-16, Section 2.3.1.7, sixth paragraph:** Please note in the text on implementablity that geomembrane covers have been successfully installed at many sites around the country, including in the phosphate patch, over many years. Many firms have experience in constructing these types of covers.

SC-60 **Page 2-17, Section 2.3.1.7, first paragraph:** Life expectancy of geomembrane can be many years if properly maintained; it should not be a reason to exclude it from further consideration.

SC-61 **Page 2-17, Section 2.3.2:** Since there are risks to human receptors associated with surface water per the text in Section 2.3.2, are there ICs or other access restrictions (e.g., fencing, signage, etc.) that could be applied in conjunction with the surface water alternatives to prevent exposure until cleanup levels are met? If so, should these be added as a component to the alternatives?

SC-62 **Page 2-18, Section 2.3.2, SW Alternatives:** The Alternative SW-6 title needs to be made clearer. It sounds like it would only treat Hoopes Spring water, but subsequent text indicates that the Hoopes Spring WTP currently treats water from both Hoopes Spring and the South Fork Sage Creek springs. The Agencies suggest a title of Treatment of Contaminated Water from Hoopes Spring and South Fork Sage Creek springs at the Hoopes Spring WTP.

SC-63 **Page 2-19, Sections 2.3.2.2, second paragraph, last sentence:** Please include fences and signs in the WG alternatives.

SC-64 Pages 2-19 through 2-25: Rock covers over seeps, detention ponds, and riparian areas are mentioned in the descriptions of alternatives SW-2 through SW-6. The rock covers do not appear to be nominal components of those alternatives, but, rather, are included as components of S alternatives. Thus, where rock covers are mentioned in the SW alternatives, the text should make clear that they are actually components of S alternatives and cite those relevant sections. Are the cost of the rock covers included in the S alternative rather than the WG and SW alternatives? What is the purpose of the rock covers? The text on Page 2-19 says that they would be placed on seeps and detention ponds (DS-7, LP-1, DP-7, and EP-2) "to prevent direct contact with surface water with arsenic concentrations greater than the MCL." However, text on Page 2-34 says that they are used to create a "physical barrier layer on soils in overburden seep and riparian areas (DS-7, ES-4, and LP-1) and detention ponds (AP-3, DP-7, and EP-4) below ODAs to prevent terrestrial biota from contacting or ingesting soil with elevated selenium concentrations." Therefore, it appears that they apply to both SW and S media, and it seems appropriate to present them as components of the S alternatives as is done. Please mention both of these functions (prevent contact with contaminated solids and water) where they are discussed in the S alternatives.

SC-65 Pages 2-19 through 2-24, cover effectiveness: Please see earlier comment asking why the effectiveness is rated the same (moderate to high) for alternatives with different types of covers, when the degree of infiltration prevention differs widely.

SC-66 Page 2-20, Section 2.3.2.3: In FSTM #1 Page 2-14, Section 2.3.3, paragraph 5, it indicates that several surface water monitoring locations showed exceedances of cadmium. Similarly, this section of FS Tech Memo #1 also points out that in addition to arsenic, exceedances of benchmarks for other non-selenium COPCs were observed for cadmium, chromium, nickel, vanadium, and zinc in the seeps and detention basins; however, these exceedances were generally associated with selenium exceedances. Therefore, to ensure that the preferred alternative proposed in FS Tech Memo #2 (Alternative SW-6 and SW-3) described in sections: 2.3.2.3, 2.3.2.6, 3.2.2, and 5 are protective of other COPCs identified in surface waters, seeps and detention basins, please provide rationale to support that cadmium, arsenic, chromium, nickel, vanadium, and zinc behave similarly to selenium for the selected remedy in surface water.

SC-67 Page 2-20, Section 2.3.2.3: The text indicates that rock covers will be similar to alternative SW-2 described on section 2.3.2.2: "…*rock covers would be placed as a physical barrier layer on seeps (DS-7 and LP-1) and detention ponds (DP-7 and EP-2) to prevent direct contact with surface water with arsenic concentrations greater than the MCL. Fences and signs to notify people that drinking the water is potentially unsafe may be installed in the interim to prevent contact*." Please clarify if this remedy will also be protective of human health exposures through drinking water for other COPCs identified in seeps and detention ponds at the site. In addition, the FS Tech Memo#2 needs to clarify how aquatic life criterion will be met for other contaminants (i.e., cadmium, arsenic, chromium, nickel, vanadium, and zinc) in surface waters at the site.

SC-68 Page 2-20, Section 2.3.2.3: The text indicates that rock covers will be similar to alternative SW-2 described on section 2.3.2.2: "…*rock covers would be placed as a physical barrier layer on seeps (DS-7 and LP-1) and detention ponds (DP-7 and EP-2) to prevent direct*

contact with surface water with arsenic concentrations greater than the MCL. Fences and signs to notify people that drinking the water is potentially unsafe may be installed in the interim to prevent contact." Please clarify if this remedy will also be protective of human health exposures through drinking water for other COPCs identified in seeps and detention ponds at the site. In addition, the FS Tech Memo#2 needs to clarify how aquatic life criterion will be met for other contaminants (i.e., cadmium, arsenic, chromium, nickel, vanadium, and zinc) in surface waters at the site.

SC-69 **Page 2-26, Section 2.3.2.6, second paragraph, last sentence:** Could the capacity be increased to 5,000 gpm to treat 100% of the water? If not, why not?

SC-70 **Page 2-26, SW-6, Effectiveness discussion:** The text says the existing 2,000 gpm system removes 40% of Se mass flux emanating from Hoopes Spring and the South Fork Sage Creek springs, whereas an expanded 3,000 gpm system would remove 60%. Assuming the selenium removal efficiency across the WTP is high given the rigorous treatment process, are these mass flux reduction percentages because they represent collection and treatment of only a modest portion of the total flow and load discharging from those spring complexes and/or from other contaminant sources? If so, is collecting and treating only those fractions of the total contaminated flow sufficient to achieve the two surface water RAOs? If not, would capturing more of the total flow allow the RAOs to be achieved? Is it not practical to capture significantly more than 60% of the contaminated discharge flow, and if not, why not?

SC-71 **Page 2-26, SW-6 cost:** Please clarify whether the stated estimated cost of $38M is for the 2,000 or 3,000 gpm system.

SC-72 **Page 2-29, Section 2.3.3.2, Alternative. AG-2, second paragraph:** The text states…" with the exception of dispersion and dilution, limited natural attenuation of selenium is occurring in the alluvial groundwater. Relatively high dissolved oxygen and low concentrations of dissolved iron and manganese also suggest oxic conditions with limited natural attenuation due to reductive precipitation." Please elaborate on the research indicating that the probability of conditions changing within the alluvial aquifer to favor MNA as a significant remedial process are influential enough to retain it as a viable alternative. As with the deeper Wells Formation aquifer, no mention was made of any study results illustrating how EPA's defining criteria for MNA were met. Please include.

SC-73 **Page 2-29, Section 2.3.3.2, fourth paragraph**: Are additional wells necessary for MNA, which would entail some capital costs? What are the O&M costs associated with MNA?

SC-74 **Page 2-29, Section 2.3.3.2, Alternative AG-2, last paragraph**: It does not make sense to retain an alternative that that is ineffective. The text states…"*geochemical attenuation mechanism does not currently limit the extent of selenium transport from the Pole Canyon ODA, and natural attenuation may offer only limited reductions in selenium concentrations in downgradient alluvial groundwater*." This does not seem like a viable alternative unless evidence can be provided that supports conditions in groundwater are expected to change that would result in geochemical attenuation.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-75 **Page 2-30, Section 2.3.3.3, fourth paragraph:** Are additional wells necessary for MNA, which would entail some capital costs? What are the O&M costs associated with MNA?

SC-76 **Page 2-31, Section 2.3.3.4, Alternative AG-4**: When describing the *Effectiveness* of the PRB, will the reduced conditions liberate arsenic from contaminated soils that revert a soluble form once it leaves the PRB? If so how will this be handled?

SC-77 **Page 2-31, Alternative AG-4 Description, first sentence:** The text "…PRB to treat water from the LP-1 seep" is confusing. Do you mean to intercept and treat alluvial ground water via PRB upgradient from the LP-1 seep before it emerges as surface water?

SC-78 **Page 2-31, Section 2.3.3.4:** PRBs were covered as SW in FS TM #1. You could simplify this TM by discussing AG and WG together since you are looking at the same response actions, and move PRB to SW. This would eliminate Section 2.3.3.

SC-79 **Page 2-32, Section 2.3.4:** Please clarify that these remedial alternatives are for waste dump areas that do not have an infiltration issue.

SC-80 **Page 2-32, Section 2.3.4, first paragraph:** Does Panel A contribute to the ground water contamination? If so, why is this area not considered in the WG alternatives?

SC-81 **Page 2-32, Section 2.3.3.4, AG PRB alternative cost:** Does the estimated cost include removal and management/disposal of the PRB media at the end of the project, to eliminate the chance of re-mobilizing selenium and arsenic accumulated in the media in the future? If not, please include.

SC-82 **Page 2-32, Section 2.3.4:** This would be a logical place to discuss that the solids and soils media represent a source of contaminants to groundwater and surface water, and that covering exposed Soils media would serve as a source control method.

SC-83 **Page 2-33, S Alternatives:** Alternative S-2 does not appear to address the stated S RAOs except in seep/riparian areas. Thus, it does not seem like a valid alternative, except in how it applies to the WG and SW media. Please correct this incongruity.

SC-84 **Page 2-34, Section 2.3.4.2, Alternative S2 Rock Covers**: Please elaborate on the *effectiveness* of these covers to prevent small mammals and reptiles from being able to burrow through cracks and crevices created by the rock covers. If this is a common occurrence, then risk still remains for environmental receptors and effectiveness should be ranked no higher than moderate.

SC-85 **Page 2-35, Section 2.3.4.3, first paragraph, first sentence:** Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same level of protection?

SC-86 Page 2-35, Section 2.3.4.3, third paragraph: The ICs discussion is not consistent throughout the document. It seems like these ICs would work as a component for all cover alternatives. Please revise the document for consistency.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-87 Page 2-36, Section 2.3.4.4, first paragraph: Why are both 2 feet and 5 feet depths considered? What are criteria for choosing one depth over another? Why not 3 feet of cover depth or 4 feet?

SC-88 Page 2-36, Section 2.3.4.4, Alternative S-4, 5-Foot Dinwoody or Salt Lake Formation/Chert Covers on Uncovered Areas of ODAs and Rock Covers on Soils in Seep and Riparian Areas: Alternative S-4 is not retained for detailed analysis, as stated "Alternative S-4 would provide the same level of effectiveness as Alternative S-3. The thicker cover would not provide additional protection. It has a significantly higher cost and is therefore NOT RETAINED." Identification of performance or infiltration reduction for both the 2-foot (S-3) and 5-foot (S-4) is not identified in each respective section, so the statement that protection is not increased with a thicker cover is not supported. Please provide further information on this determination. It is recommended that the 5-foot cover in S-4 be retained for detailed analysis, as it is consistent with completed cover installed at the Pole Canyon ODA and has current performance data available.

SC-89 Page 2-38, Section 2.4: The list of remedial alternatives that are retained for the detailed analysis will need to be modified based upon Agencies' comments.

SC-90 Page 3-1, Section 3.0, second paragraph, last sentence: The treatability study data should have been considered in the development and screening of alternatives in order to determine whether the pilot WTP is a viable alternative to move into the detailed analysis phase. This sentence should be revised or deleted.

SC-91 Page 3-1, Section 3.1: Please add the reference for the nine criteria within the National Contingency Plan (40CFR300.430(e)(9)).

SC-92 Page 3-2, Section 3.1.1, first paragraph, last sentence: For completeness and ease of review, the chemical-, action- and location-specific ARARs should be presented in FSTM#2 as well. Please revise.

SC-93 Page 3-2, Section 3.1.2, Long-term effectiveness and permanence: Please include a discussion that magnitude of residual risk and adequacy and reliability of controls are important components of this criterion.

SC-94 Page 3-2, Section 3.1.2, Reduction of TMV: Please correct this criterion to be Reduction of TMV through treatment and include the pertinent components of this criterion, as described in USEPA 1988, in the description.

SC-95 **Page 3-2, Section 3.1.2, Cost:** Please note that the cost criterion also includes the present worth analysis.

SC-96 **Page 3-3, Section 3.2:** The individual analysis of alternatives was not presented or conducted in accordance with the USEPA 1988 RI/FS guidance. Per USEPA guidance, the narrative discussion of the analyses, should for each alternative, present the assessment of the alternative against each of the criteria. The "assessment" in FSTM#2 does not do that. Please revise to include a discussion of each alternative against each criterion individually. The Agencies will review and comment on the individual analysis of alternatives in the next iteration of the FSTM#2.

SC-97 **Page 3-7, Section 3.2.1.1, third paragraph, second sentence:** How much reduction in selenium concentrations is expected to occur? Please revise.

SC-98 **Page 3-7, Section 3.2.1.1, third paragraph, second sentence:** The Agencies disagree that the source should remain uncontrolled for the next 50 to 100 years. A more robust source control alternative should be preferred.

SC-99 **Page 3-7, Section 3.2.1.2, Alternative WG-3 – ICs:** As mentioned above, ICs alone do not address the WG RAOs.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-100 **Page 3-8, Section 3.2.1.3, third paragraph, last sentence:** Please also note that the relatively new cover concept is also unproven. It is unclear why the Agencies would support such an alternative to be selected as a remedy when the effectiveness would need to be analyzed during design. Please clarify.

SC-101 **Page 3-9, Section 3.2.1.3, Alternative. WG-5, Capillary Covers:** Some of the descriptions are lacking in relevant information such as: "Overburden grading or addition of fill material (Dinwoody, Salt Lake Formation or chert) will be required to produce the continuous slopes required for effective performance." What slope grades are needed for effective performance? Or, the capillary cover has a preliminary estimate of reducing infiltration by 58% based on performance of a similar cover at the Blackfoot Bridge Mine. Are climatic conditions (specifically precipitation and snow accumulation) and cover materials similar enough between the Blackfoot Bridge site and Smoky Canyon to conclude that the cover would produce the same results. Please provide a summary statement citing the data, if available, indicating it would function the same.

SC-102 **Page 3-10, Section 3.2.1.4, second paragraph, third sentence:** What does finite life expectancy mean? How many years is it expected to last?

SC-103 **Page 3-10, Section 3.2.1.4, second paragraph, last sentence:** Please note, as with all cover systems, proper O&M and annual inspections can minimize these effects.

SC-104 **Page 3-10, Section 3.2.1.4, third paragraph and fourth paragraph:** The challenges to install a geomembrane are noted, but there are specialized companies that install these types of liners, with many successes over decades. Please note in the text.

SC-105 **Page 3-12, Section 3.2.2.1, third paragraph, seventh sentence:** Please change "Canon" to "Canyon".

SC-106 **Page 3-12, Section 3.2.2.1, third paragraph, last two sentences:** Please provide a reference document for the Ground Water Model in order to review the decrease in load from the active mining at the site.

SC-107 **Page 3-13, Section 3.2.2.1, third paragraph:** Based upon Figure 3-7, there is a significant amount of selenium still remaining in the waste dumps. The first pore volume has not yet been depleted and still may have 15 to 30 years before it is depleted, according to the model. It could be another few hundred years before the estimated concentrations in the pore volume meets ground water quality standards at the edge of the waste management area. Please clarify the section to reflect this perspective accurately.

SC-108 **Page 3-13, Section 3.2.2.1, fourth paragraph:** Unless there is more certainty on whether selenium concentrations would meet surface water standards, the phrase "and could ultimately be in the range of the surface water standard" should be deleted.

SC-109 **Page 3-11, Section 3.2.2.1, Assessment and all subsequent Assessment sections in FSTM#2:** As previously noted, the Assessment section does not address the CERCLA nine criteria for remedy selection. Please revise.

SC-110 **Page 3-16, Section 3.2.2.4, Assessment, last paragraph, last sentence and Page 3-17, first paragraph, last sentence:** Could the capacity be increased to 5,000 gpm to treat 100% of the water? If not, why not? As noted in the next paragraph, selenium concentrations would be reduced to below water quality standards more quickly with treatment.

SC-111 **Page 3-17, Section 3.2.2.4:** Estimated selenium concentrations of assuming 3,000 gpm system are generally above the selenium water quality standards 16.7 micrograms per liter [µg/L] for Hoopes Spring and Sage Creek; 4.2 µg/L for Crow Creek. This section needs to clarify how the exceedances in the summer, winter, and fall will be minimized at LSV-4 and CC-WY-01 and if additional treatment will be considered.

SC-112 **Page 3-17, SW-6a and -6b Assessment:** The data presented in Figure 3-9 and associated text demonstrate that the existing Hoopes Spring WTP, while removing considerable amounts of selenium, is generally not capable of removing enough selenium to meet compliance with water quality standards (WQS) in surface waters, when treating either 2000 or 3000 gpm. This suggests that, in order to meet the surface water RAOs and to be protective, there is a need to: (a) improve selenium removal efficiency across the WTP, or (b) collect and treat more selenium-contaminated water, so that more selenium mass can be removed, or (c) both. Is it practical to collect more selenium-contaminated water at the spring complexes or elsewhere for treatment, so that more selenium mass is available for removal? In Figure 3-9, Agencies suggest adding a note saying that "Measured" means

with treatment of 2000 gpm (if that is correct – it is not clear). The last paragraph under the Assessment heading is likely true but does not seem like particularly strong support for this alternative in terms of achieving RAOs in the short-term.

SC-113 **Page 3-19, Section 3.2.3.2, Alternative. AG-3 ICs and MNA:** The description and assessment speak solely to the role of ICs; there is no mention of MNA. Please include relevant information on MNA as well.

SC-114 **Pages 3-19 to 3-20, Section 3.2.3.3, Alternative. AG-5 PRB, ICs and MNA**: The description and assessment speak solely to the role of PRBs and ICs; there is no mention of MNA. Please expand the description to include information on MNA processes, if any.

SC-115 **Page 3-20, Section 3.2.3.3, last paragraph under Assessment of AG-5:** There are other studies and even full-scale PRB systems treating selenium in eastern Idaho that could provide an indication of the ability to achieve RAOs and the performance of PRB treatment over time. Is the last sentence is missing the word like "system" after "treatment"?

SC-116 **Pages 3-20 to 3-26, Section 3.2.4, Solids and Soils Remedial Alternatives:** Based on the assessment of Alternative. S-1 through S-3, the evaluation appears to conclude that the PRG for arsenic is met under current conditions and no further remedial action needs to be considered for uncovered ODAs, with the exception that contaminated seeps and springs will receive a rock cover. The objective of the rock cover is to prevent direct contact by birds and small rodents with contaminated surface water. It appears that this is the result of additional risk assessment information. With some explanation, it appears that most of the remedial options for this media could be/should be screened out at an earlier stage of the FS process. Please change the document to reflect this screening.

SC-117 **Pages 3-21 to 3-23, Section 3.2.4.1:** Unless the small mammal study at the Conda Mine has been approved by the Agencies as a final document, please delete all references to that study.

SC-118 **Page 3-21 through 3-25, Section 3.2.4.1, S Alternatives Assessment:** Section 2.3.5 says there are potential risks associated with the Soils media, to seasonal ranchers from consumption of beef grazed on ODAs (due to arsenic in soil), and to terrestrial biota (due to selenium in soil). Is this text in Section 3 basically presenting new information that contradicts the earlier statement and concludes that there are, in fact, no risks associated with the Soils media? And, later, the Summary section on Page 4-13 says "Protection of human health and the environment is achieved under current conditions for overburden…" It appears that the document has concluded, based on new information presented, that the solids and soils media present no risk and, therefore, does not require remedial action – is this understanding correct? The S alternative selected for the recommended remedy consists of just rock covers in seep and riparian areas, which might be for the purpose of preventing contact with SW. If there is really no risk or need for remedial action for the S media, why was that case not made up-front and the development and evaluation of S alternatives omitted? Another possible reason for S media remediation is source control, to mitigate migration of contaminants from solids and soils to groundwater and surface water. Please include this reason for S media remediation.

SC-119 **Pages 3-22 and 3-23, Assessment:** Please delete all references to the Nu-West sites as those documents and the site-specific TRVs cited have not been approved by the Agencies.

SC-120 **Page 3-26, Section 3.2.4.4:** Placement of rock covers on soil in seep and riparian areas would prevent exposure of small mammal (e.g., deer mice) and bird (e.g., American robin) populations to selenium in soil in seep and riparian areas downstream of Panel D, Panel E, and the Pole Canyon ODA (DS-7, ES-4, and LP-1). Since FS Tech Memo #1 identified terrestrial biota exposed to other COPCs (i.e., cadmium, chromium, copper, lead, manganese, molybdenum, vanadium and zinc) had lower risk compared to co-located areas of selenium, the text need to emphasize that the remedy is also protective of other COPCs identified at the site where selenium concentrations were elevated and ensure that the remedy is also protective of these contaminants, and not only selenium.

SC-121 **Page 4-1, Section 4.0, first paragraph, second and third sentences**: The purpose of the comparative analysis stated in the document is not exactly correct. Per EPA's RI/FS guidance, "...a comparative analysis should be conducted to evaluate the relative performance of each alternative in relation to each specific evaluation criterion. This is in contrast to the preceding analysis in which each alternative was analyzed independently without consideration of other alternatives. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs the decision maker must balance can be identified." Please revise.

SC-122 **Page 4-1, Sec 4.1, WG alternatives - first two (threshold) evaluation criteria**: EPA's RI/FS guidance document states that the two threshold criteria – protection of human health and the environment, and compliance with ARARs – must be met by each alternative retained (except a No-Action alternative). Therefore, the discussion of how these criteria are addressed for each alternative normally contains what is basically a "yes or no" answer. If the answer for either of the threshold criteria is "no", there is really no need to go any further in evaluating the balancing criteria. In many instances, this document presents an equivocal answer to one of these criteria for alternatives. This suggests that (a) more analysis may be needed to give an unequivocal answer, or (b) additional components are needed in the alternatives to allow them to more definitively comply with these criteria. (Note: this comment also applies to alternatives for the other media in Section 4, evaluation of the alternatives in Section 3, and the alternative detailed analysis tables.) Please change the document to reflect the desired yes/no criteria.

SC-123 **Page 4-1, Section 4.1, third paragraph:** The Agencies disagree that there are no significant differences between alternatives WG-3, WG-5, or WG-7 in terms of overall protection of human health and the environment. WG-7 provides 100% reduction in infiltration which controls the source of the contamination. ICs do not provide source control, and capillary covers provide limited source control. Please revise.

SC-124 **Page 4-3, Section 4-1, Summary:** The summary section should be deleted as it is not part of the comparative analysis. Please delete here and in subsequent similar sections.

SC-125 **Page 4-4, Sec 4.1, WG alternatives Summary:** The first paragraph on this page indicates that the remedy relies on decreases in selenium concentrations over time, caused by

previous remedial actions at the site and potentially enhanced by new covers if selected, but states that "it is uncertain whether selenium concentrations will ultimately reduce to below the MCL at all monitoring locations." Unless this uncertainty could be decreased (e.g., through additional data collection and analysis over a period of time and/or modeling), a need for additional remedial action to be protective and meet MCLs/RAOs/ARARs, such as groundwater treatment, is indicated. Further consideration/discussion of this is warranted.

SC-126 **Page 4-4, Section 4-1, Summary, first paragraph, last two sentences**: The text contradicts the earlier statement that there is no significant difference between the alternatives.

SC-127 **Page 4-4, Section 4.2, bulleted list:** Alternatives SW-3 and SW-5 are redundant with WG alternatives. These should be deleted from SW discussion.

SC-128 **Page 4-4, Section 4.2, Overall Protection of Human Health and the Environment**: The text needs to be revised as most of the discussion does not focus on the criterion.

SC-129 **Page 4-6, Section 4.2, Compliance with ARARs:** Please state which alternatives will or will not meet ARARs. The ARARs are more than the surface water standard. Please discuss the pertinent location-, action- and chemical specific ARARs, as well as any TBCs, here and in subsequent similar sections.

SC-130 **Page 4-6, Section 4.2, second paragraph and Figure 4-1:** What does relative reduction mean? While relative reduction values are useful for comparing alternatives, some idea of how much load reduction is required to meet WQS/RAOs/ARARs is needed to evaluate alternative effectiveness. (For example, achieving 60% contaminant load reduction might sound good, but not if 80% reduction were needed to meet WQS.) Also, it appears that something is missing in the sentence that includes "…the system average treatment flow rate is 1,700 and 2,550 gpm, respectively…" Please revise.

SC-131 **Page 4-9, Section 4.3:** EPA guidance for threshold criteria states, "Overall protection of human health and the environment and compliance with ARARs will generally serve as threshold determinations, and that they must be met by any alternative in order for it to be eligible for selection." The description of alluvial groundwater alternatives states that modeling indicates the rate of release of selenium from the Pole Canyon ODA with ICs only are expected to decrease over time (at least a decade), which would eventually result in water quality below MCLs down gradient of Pole Canyon. Construction of a PRB at seep LP-1 would result in a more rapid reduction with the same results. Under both scenarios, water quality in Pole Canyon would degrade naturally at the rate of selenium release from the Pole Canyon ODA. It appears that incorporation of the PRB at LP-1 as a pro-active remedial measure comes closer to promoting compliance with ARARs as mandated by guidance than utilization of ICs alone. This would also fulfill EPA's preference for treatment over the use of ICs only. Please reconsider your remedial option selection.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-132 **Page 4-9, Section 4.3:** Selected alluvial groundwater remedy AG-3 includes institutional controls only. This is an inappropriate remedy selection for the site, as ICs cannot constitute the entire remedy for an exposure matrix unless specific requirements (not addressed in FSTM2) are met as identified in the NCP and EPA guidance. In addition, alternative AG-3 does not meet expectations for the return of usable ground waters to their beneficial uses. Based on the 3 alternatives brought forward for this evaluation, only AG-5 is a viable option for use based on EPA policy and CERCLA guidance. Reference sections from the NCP and IC Guidance are below.

§ 300.430 Remedial investigation/feasibility study and selection of remedy.

> (iii) *Expectations.* EPA generally shall consider the following expectations in developing appropriate remedial alternatives:
>
> (D) EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.
>
> (F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction

Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites (OSWER 9355.0-89 EPA-540-R-09-001 December 2012):

> *CERCLA*. Under the NCP, the remedy selection process under CERCLA is guided by several expectations. These include: (1) treatment should be used wherever practicable to address principal threat wastes; 10 (2) groundwater should be returned to its beneficial use wherever practicable in a reasonable time frame; 11 and (3) ICs should supplement engineering controls as appropriate to prevent or limit exposure, but ICs normally "shall not substitute for active

response measures…as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy."

Thus, consistent with the NCP, an IC- only remedy may be appropriate under certain circumstances. The remedy selection process that culminates in an IC-only ROD should be carried out consistent with the statute (e.g., on-site remedial actions must meet or waive ARARs pursuant to section 121(d)) and the NCP, including provisions which address expectations (e.g., 40 CFR 300.430(a)(1)(iii)(D)), developing a range of alternatives (40 CFR 300.430(e)(1) and (2)), and analyzing alternatives through the nine-criteria analysis (40 CFR 430(e)(9)). ICs often play an important role by minimizing the potential for exposure for residual contamination and by protecting engineered remedies; however, as provided in the NCP, ICs are not intended to be a way "around" treatment or groundwater restoration.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

SC-133 **Page 4-12, Section 4.4, Compliance with ARARs:** Please discuss any TBCs or location or action specific ARARs for the soils and solid media alternatives.

SC-134 **Page 5-1, Section 5.0, third point:** Please provide additional arguments supporting the selection of alternative 6a as opposed to 6b. As presented in to the Agencies on 18-May-2020 on slide 141, neither of these rates were predicted to reduce selenium below the aquatic life criterion 100% of the time (noting the 3,000 gpm was predicted to reduce below threshold a couple months out of the year). It is unclear why the 2,000 gpm alternative is preferred. Please clarify.

SC-135 **Page 5-1, Section 5.0:** FSTM#2 as written has not demonstrated that the recommended site remedy reflects the best balance of the CERCLA remedy selection criteria, as the current analysis does not follow USEPA RI/FS and remedy selection guidance. The Agencies will review this section after the requested changes to the document have been completed.

SC-136 **Page 5-1:** Sage Creek and Crow Creek do not have any designated uses under IDAPA 58.01.02.110 through 160; however, IDAPA 58.01.02.101 states: "undesignated waters shall be protected for beneficial uses which includes all recreational use in and on the water and the protection and propagation of fish, shellfish and wildlife, whenever attainable." Further, IDAPA 58.01.02 101.01.b and 101.01.c specifies that DEQ "…will apply cold water and aquatic and primary and secondary contact recreation criteria to undesignated waters". Thus, the human health criteria ("fish only") of the Table of Numeric Criteria for Toxic Substances contained in IDAPA 58.01.02.210.01 apply to Sage Creek and Crow Creek. The following table shows the current applicable water quality criterion for the COPCs identified at the site for Sage Creek and Crow Creek.

COPC	Aquatic Life Criterion (µg/L)		Fish Only (µg/L)
	Acute	Chronic	
Arsenic	340	150	10
Cadmium	1.3	0.6	NA
Chromium III	570	74	NA
Chromium (VI)	16	11	NA
Nickel	470	52	100
Vanadium	NA	NA	NA
Zinc	120	120	1,500

The values highlighted in gray are the most conservative and should be considered as threshold values. Vanadium does not have a threshold value. Ohio has a chronic aquatic life criterion for vanadium of 44 µg/L that could be consider as a threshold value. The FS Tech Memo #2 needs to acknowledge that ARARs related to surface water quality criteria apply (i.e., Primary and Secondary Contact Recreation uses (Fish only criteria) for Crow Creek and Sage Creek) and for arsenic the human health criteria are more stringent that the WQS. Therefore, the EPA's human health criterion for arsenic applies. Please revise.

SC-137 **Page 5-3, Section 5:** This states that deed restrictions will be in placed on Simplot-owned land in Sage Valley to prevent the use of Wells Formation and alluvial groundwater with selenium concentrations greater than the MCL as a source of drinking water. This section should also emphasize that the proposed remedy will also prevent exposures to elevated levels of other COPCs (aluminum, iron and manganese) in Wells Formation and aluminum and arsenic in alluvial groundwater as stated on page 2-11 of the FS Tech Memo #1.

SC-138 **Figure 2.1, Section 2.2, second paragraph:** The source areas are identified to include Panels A, B, C, D, and E and the associated ODA's, yet the target area only includes a small portion of the identified sources of contamination. Please explain why the other areas are not addressed with covers to prevent Wells Formation ground water and surface water contamination.

Tables:

T-1 **Table 2-1**: This Table provides the technologies retained from FSTM#1. However, many of these technologies are not included in the assembled alternatives. There is no discussion on how/why these were screened out. Please correct.

T-2 **Table 2-2, Column 2, WG-2, MNA:** Column test results do not provide evidence that aquifer conditions are conducive to MNA as an effective remedial process to reduce selenium in the GW. This stage is intended to retain only those remedial technologies with promise of being effective. Please justify why it was retained. (For example, show how it meets EPA's Guidance Criteria for MNA).

T-3 **Table 2-2, Column 3, WG-3, Row Protection of HH and the Environment:** The text states that… "There are no environmental risks from Well Formation GW." Please clarify how this statement can be true when contaminated Wells Formation ground water discharges from the Hoopes Springs and South Fork of Sage Creek Springs and contaminates surface water in Sage and Crow Creeks. (The same question applies to WG-4, WG-5, WG-6, WG-7).

T-4 **Table 2-2, Column 4, WG-4 5-Ft Dinwoody or Salt Lake Formation/Chert Cover, ICs, MNA, Row Effectiveness:** Please justify a Moderate to High rating. This should be reduced to Moderate only, since infiltration is only reduced by 29% and the balance contributes to the contaminated discharge at Hoopes Springs (Surface Water).

T-5 **Table 2-2, All Columns, WG-2 to 7, Row Compliance with ARARs:** The text as written does not indicate whether the Alternative will result in compliance with ARARs. Please revise and clarify whether it will or will not.

T-6 **Table 2-3, Column 2, Alternative. SW-2, 5-Ft Dinwoody or Salt Lake Formation/Chert Covers; Row Effectiveness:** Please justify a Moderate to High rating. This should be reduced to "Moderate" only, since… "*Selenium concentrations are anticipated to decrease over time; however, it is uncertain whether they will ultimately reduce below the water quality standard at all monitoring locations in Sage Creek and Crow Creek over the long term.*" The surface water associated with the Springs still carries a risk to the environment. Rock covers do not mitigate the environmental risk to small mammals, birds, and amphibians (this also applies to Alternatives SW-2 thru SW-6).

T-7 **Table 2-3, All columns, SW-2 thru 6; Row Compliance with ARARs**: The text as written does not indicate whether the Alternative will result in compliance with ARARs. Please revise and clarify.

T-8 **Table 2-4, Column 2, AG-2. MNA:** Column test results do not provide evidence that aquifer conditions are conducive to MNA as an effective remedial process to reduce selenium in the alluvial ground water.… "*It appears that the geochemical attenuation mechanism does not currently limit the extent of selenium transport from the Pole Canyon ODA, and natural attenuation may offer only limited reductions in selenium concentrations in downgradient alluvial groundwater."* This stage is intended to retain only those remedial technologies with promise of being effective. Please justify why it was retained. (For example, show how it meets EPA's Guidance Criteria for MNA).

T-9 **Table 2-4, Column 3; AG-3, ICs and MNA; Row Effectiveness:** Please justify the Moderate to High rating. This should be reduced to "Moderate" only, since alluvial ground

water likely mixes with Wells Formation ground water as it discharges at the Hoopes and South Fork of Sage Creek Springs, resulting in a continued risk to environmental receptors.

T-10 **Table 2-5, All columns, SW-2 thru S-4; Row Compliance with ARARs:** The text as written states there are no chemical specific ARARs for selenium in soil. This statement does not indicate whether the Alternative will result in compliance with other action and location specific ARARs (comment also applies to Alternatives. S-3 and S-4). Please revise and clarify.

T-11 **Table 2-6:** Please add a footnote to the table identifying the spring/seep location abbreviation with a name.

T-12 **Table 3-1, Column 1; WG-1 No Further Action; Row Compliance with ARARs:** Detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise.

T-13 **Table 3-1, Column 2; WG-2 Institutional Controls; Row Compliance with ARARs:** Same comment as for WG-1. Detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise.

T-14 **Table 3-2, Column 2; SW-3 Capillary Covers; Row Compliance with ARARs:** The text defers to the previous protection of the environment discussion. This response is not adequate. It should be a definitive answer, either yes it will achieve ARARs or not. Please revise. Also adjust the rating from "Moderate – High" to "low – Moderate". [This comment is applicable to the other SW Alternatives, as well]

T-15 **Table 3-2, Column 2; SW-3 Capillary Covers; Row Time until Remedial Objectives are Met:** The following text provides no insight as to when remedial objectives will be met. "*Completion of covers at the target areas would result in a reduction of selenium releases from these ODAs and would be expected to reduce selenium mass flux in Wells Formation groundwater and consequently the mass flux discharging at the springs compare over time."* Please revise. [Same comment for Alternative. SW-5]

T-16 **Table 3-3, Column 1; AG-1 No Further Action; Row Compliance with ARARs:** The result of the detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise. This applies to Alternative. AG-3 as well.

T-17 **Table 3-3, Column 3; AG-3 ICs and MNA; Row Long Term Effectiveness and Permanence:** The rating should be changed to "Low to Moderate" based in the lack of confidence that MNA is a reliable remedial action. Please revise.

Appendix A – Attachment 1 – Supplemental Analyses

A-1 Please provide inputs and outputs for all HELP demonstrations, including comparisons between Dinwoody and Salt Lake Formation. There needs to be data for each type of evapotranspiration cap being proposed.

Appendix B – Cost Estimate for Remedial Alternatives

B-1 **Page 1, Introduction, first paragraph:** It would be helpful to include a description of what is meant by cost-effective, as outlined in USEPA's RI/FS guidance. "A remedial alternative is cost effective if its "costs are proportional to its overall effectiveness" (40 CFR 300.430(f)(1) (ii)(D)). Overall effectiveness of a remedial alternative is determined by evaluating the following three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility and volume (TMV) through treatment; and short-term effectiveness. Overall effectiveness is then compared to cost to determine whether the remedy is cost-effective." Please include.

B-2 **Page 2, Sec 2.4., last paragraph:** Bid contingencies typically range around 35%. Please clarify.

B-3 **Page 2, Section 2.6:** The current Mobilization/Demobilization cost estimates are the same for all (WG-4, -5, -6, -7). The current cost estimate will not cover scope of work items outside of equipment, personnel and possibly a few of the work plans. Please clarify/confirm the scope of work listed that costs are covered by the last sentence of this section.

B-4 **Page 3, Section 2.7, last paragraph:** A discount rate of 7% may understate inflation and/or overstate investment return. Based on current conditions rate of inflation may go higher and return on investment lower. Does the EPA Guidance set the rate or is it variable range?

B-5 **Page 4, Cost Estimates for Media-Specific Remedial Alternatives, first paragraph, second sentence:** Are Simplot costs significantly different than the RS Means Costs? It would be helpful to understand if Simplot costs generally run higher or lower than RS Means Costs.

B-6 **Page 4, Section 3, first paragraph:** Please check reference to "RS Means 2018". Footnote 1 identified RS Means 2019 in Table B-2l.

B-7 **Page 4, Section 3.1, fourth bullet, Alternative WG-4**: Estimate detail breakdown indicates estimate based on two 2-foot layers of cover material installation. Please confirm 5-foot is correct.

B-8 **Page 5, Section 3.1.4, second sentence:** The cover description does not align with detailed estimate scope/cost breakdown (Table B-1h). The estimate cover cost is based on 2-foot of layer of Dinwoody and a 2-ft layer of Dinwoody/SLF. Please clarify.

B-9 **Page 5, Section 3.1.5, second sentence:** The cover description does not align with detailed estimate scope/cost breakdown (Table B-1i). The estimate cover cost is based on 2-foot of layer of Dinwoody and a 2-ft layer of Dinwoody/SLF. Please clarify.

B-10 **Page 6, Section 3.1.6, second sentence:** The layers do not align with estimate breakdown detail thickness, quantities and/or layers (Table B-1j). Please verify the number of layers, materials, and layer thickness.

B-11 **Page 6, Section 3.1.6, second paragraph:** Based 194 acres at 35 acres completed per season, it would take 5.5 seasons to complete; at 30 acres per season, it would take 6.5 seasons. Please clarify.

B-12 **Page 6, Section 3.1.6:** What are the interim O&M cost for years 2 – 5? If 35 acres are completed per year, then year 2 would require 35 acres O&M, year 3 would require 70 acres O&M and so on until year 6 (or 7). Please clarify.

B-13 **Page 6, Section 3.1.7, third sentence:** The layers, thickness and/or material description do not align with the detailed estimate scope/cost breakdown (Table B-1k). Please clarify.

B-14 **Page 8, Section 3.2.4, second paragraph:** What are the interim Annual O&M costs? Beginning with year 2, Alternative WG-6 will complete up to approximately 35 acres of cover per construction season year 1; adding 35 acres each of the following years. Please clarify.

B-15 **Tables B1a – B1g:** The summary tables are not consistent with detailed tables. Periodic costs are included in summary table but are 0 in detailed tables. Please revise.

B-16 **Table B1-b and subsequent tables, footnote b:** US Forest Service, as the lead agency, is responsible for conducting the five-year reviews -- not Simplot and not USEPA. Please revise.

B-17 **Table B-1b:** There is no cost breakdown for groundwater monitoring, based on note c and 10 sampling locations. How many samples will be collected and analyzed? What are QA/QC costs? What is sampling frequency? Does this assume no additional sampling locations, well maintenance, or production of an annual report?

B-18 **Table B-1c:** Please provide the cost breakdown for each estimated cost.

B-19 **Table B-1d:** Please provide a cost breakdown for the covers and estimated cost. Please verify 5 feet of cover over 194 ac = ± 1,565,000 cy, whereas cost breakdown in Table B-1h based on 4 feet of cover in "Misc. Layers"?

B-20 **Footnote c:** What are the general details of the Pole Canyon estimates? For example, what were the Pole Canyon conditions compared to current Smoky Canyon conditions (material to grade/area of Pole Canyon where Cover was installed -percent compared to Alternative WG-6)?

B-21 **Table B-1f, Annual O&M cover starting in year 6 after completion of cover installation:** The estimate does not breakdown O&M cost for progressive completion of the cover… (i.e. 35 acres per construction season). Please provide more detail.

B-22 **Table B-1g, cover end of year 1**: Given the limited construction season and the scope work required to complete grading and installation of the protect subgrade layer, how many years will installation of the geomembrane (temperature limitation) and geomembrane cover. Or will it only take a single season to install the cover?

B-23 **Table B-1h**: The costs for Regrade/Compact/Strip at $0.023/SF seems low. What is the Simplot estimate based on? How much grading (cubic yards of cut & fill), compaction effort (loose lift compaction) and striping (vegetation, topsoil, disposition of strip materials) is needed? How does the Regrade/Compact/Strip WG-4 differ from WG-5 as well as compare with Pole Canyon?

a. What are the haul road specifications? For example, what is the width, estimated total feet of haul road, grade, surface material, drainage (culverts, ditches, swales, etc).

b. Is topsoil included in the "Misc. Layers" cost? It does not appear that 3.1.4 Alternative includes a top soil layer?

c. Please correct the Misc. Layer description. The table header identified as 5-Foot layer in table B-1h but only as 4 feet in "Misc. Layers". The text describes 3.1.4 Alternative WG-4 as consisting of a 2-foot layer of chert or limestone overlain by an approximately 3-foot layer of Dinwoody.

d. Erosion Control: Is a storm water/run off water control pond/impoundment required for this Alternative?

e. Mobilization/Demobilizatio: Section 3.1.4 Alternative WG-4 includes substantially more scope than equipment and training. Please clarify.

f. Global comment Footnote e: Please provide Simplot cost breakdown.

g. Global comment Footnote f: Please provide general details of the Pole Canyon O&M estimates, cost by acre/cubic yard, and when work was started and completed.

B-24 **Table B-1i:**

a. What is the basis for $3,500/ac? Other than 194 acres, no other information is presented to support the cost estimate.

b. How does the Regrade/Compact/Strip effort differ from WG-4?

c. How does the third party survey for effort WG-4 ($1,000/ac) differ form WG-5 ($5,000/ac)?

d. How does the third party survey for effort WG-5 ($5,000/ac) differ form WG-6 ($15,000/ac)?

e. Please include haul road specifications.

f. What is the core material source and specification?

g. Please correct “Misc. Layers”…3.1.5 Alternative WG-5 states the layers as bottom to top, 6-in screened Dinwoody, 1-ft screened chert, 2-ft layer un-compacted Dinwoody.

h. Section 3.1.5 Alternative WG-5 calls for a bottom layer of 6-in screened Dinwoody and does not refer to compacted 6-in Screened Dinwoody. Please clarify the WG-5 layers and layer materials.

i. Section 3.1.5 Alternative WG-5 does not refer to Core Materials, placement of Core Materials, Riprap, Drainage Benches and/or outlet ponds. Please clarify the source of Core Materials, Riprap and Placement.

j. Excavate and grade outlet ponds: Please provide the design information upon which this estimate is based.

k. Are the Erosion Control Costs the same as WG-4? There is a considerable difference of surface runoff management between WG-4 and WG-5. Please clarify.

l. Mobilization /Demobilization: This appears to require additional equipment and labor resources than required over WG-4. Is WG-5 same cost as WG-4? Section 3.1.5 Alternative WG-5 includes substantially more scope than just equipment and training. Please clarify.

B-25 Table B-1j:

a. How does the Regrade/Compact/Strip effort differ from WG-4?

b. How does the third party survey for effort WG-5 ($5,000/ac) differ form WG-6 ($15,000/ac)?

c. Please include haul road specifications.

d. Geomembrane is not addressed in 3.1.6 Alternative WG-6. Please clarify Geomembrane drainage ditch installation.

e. Section 3.1.6 Alternative WG-6 states bentonite as 5% additive, bur is identified in Table as a 7%. Which is correct?

f. Please clarify the Haul Bentonite line item cost.

g. Section 3.1.6 Alternative WG-6 states the drainage is a 12-in layer, but is identified in Table as 18-inch layer. Which is correct?

h. Section 3.1.6 Alternative WG-6 does not refer to Core Materials, placement of Core Materials, Riprap, Drainage Benches and/or outlet ponds. Please clarify the source of Core Materials, Riprap and Placement.

i. Excavate and grade outlet ponds: Please provide design information upon which that estimate is based.

j. Mobilization / Demobilization: Section 3.1.6 Alternative WG-6 includes substantially more scope than just equipment and training and multiple mobilizations. Please clarify.

k. Initial Annual O&M starting with year 6: Please refer to Table B-1f. Should the estimate include progressive O&M costs for completed cover for year 1 to start of year 6?

B-26 Table B-1k:

a. Please address same comments as Table above for these aspects of this table:

   i. Prepare Slope for Cover System

   ii. Prepare Materials

b. Section 3.1.7 Alternative WG-7 does not refer to a GCLL layer. Please clarify the GCLL and Geocomposite layer (materials and installation).

c. Section 3.1.7 Alternative WG-7 identifies the cover layers as: 1-foot protective subgrade layer, geomembrane layer, and 3-feet of Dinwoody/Topsoil on top of the hydraulic barrier. Is the 1-foot protective subgrade layer is missing?

d. Excavate and grade outlet ponds: Please provide design information upon which that estimate is based.

e. Mobilization / Demobilization: Does this require additional equipment and labor resources requirement similar to WG-5. The scope of work may require more than a single mobilization to complete the cover. Section 3.1.7 Alternative WG-7 includes substantially more scope than just equipment and training.

f. Initial Annual O&M Costs and Subsequent Annual O&M Costs. What is the basis of a 200% increase over WG-6?

B-27 Tables B-2b:

a. Capital Cost: Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling as WG-4, or additional sampling? Please clarify.

c. Footnote d.: Is this the same sampling as WG-4? How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

B-28 Tables B-2c:

a. Capital Costs: Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling as WG-5 or additional sampling? Please clarify.

c. Footnote d: Is this the same sampling as WG-5? How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

B-29 Tables B-2d and Table B-2e:

a. Capital Costs: Are Institutional Controls cost associated with Physical Barriers?

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling? Please clarify.

c. Footnote d: Is this the same sampling as WG-5 and 6? . How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

B-30 Tables B-2f:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Section 3.2.6 Alternative SW-6a refers to continued operation of an existing WTP. There is no reference to WTP capital cost. Please clarify.

c. Section 3.2.6 Alternative SW-6a refers to SW-6a capital cost as the direct cost for rock covers, fences, and signs. Please describe physical barriers.

d. Surface Water Monitoring & Footnote c: The text refers to 10 sampling locations. The WTP would be one sampling location? Please clarify.

B-31 Tables B-2g:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Should include only the capital cost for construction of 1 - 1,000 gpm parallel treatment system (not the new system plus the existing system)? Please clarify.

c. Surface Water Monitoring & Footnote c: The text refers to 10 sampling locations. The WTP would be one sampling location? Please clarify.

B-32 Table B-2h: Refer to Table B-1h for capital cost review comments.

B-33 Table B-2i: Refer to Table B-1i for capital cost review comments.

B-34 Table B-2j: Refer to Table B-1j for capital cost review comments.

B-35 Table B-2k: Refer to Table B-1k for capital cost review comments.

B-36 Table B-2l:

a. Construct 2000 gpm WTP: Section 3.2.6 Alternative SW-6a Refers to an existing Hoopes 2,000 gpm WTP. Why is capital construction cost included for an existing facility?

b. Indirect Construction: Mobilization/demobilization cost should reflect items required for barrier protection scope of work.

c. Indirect Construction: Water/Sediment Control costs should be based on the scope of work addressed in 3.2.6 Alternative SW-6a. Section 3.2.6 Alternative SW-6a refers to physical barriers at seep DS-7 and LP-1 and detention basin DP-2 and EP-2s. Is this line item the construction for the described work? The indirect construction cost is based on a percentage of construction cost of existing facility. Please clarify.

d. Remedial Design and Project/Construction Management: With the exception of water/sediment control, Alternative SW-6a refers to a fully operational facility. Please clarify.

e. O&M Costs. Please provide a breakdown of Simplot O&M Cost (labor, materials, equipment, analysis, disposal, etc.).

f. Footnote f: This footnote is missing.

B-37 Table B-2m:

a. Construct 2000 gpm WTP: Section 3.2.6 Alternative SW-6a Refers to an existing Hoopes 2,000 gpm WTP. Why is capital construction cost included for an existing facility?

b. Expand to 3000 gpm: Please provide a cost breakdown of footnote d, Simplot cost estimate?

c. With new parallel treatment system, should there be an initial annual O&M cost?

d. Annual O&M Costs. Please provide a cost breakdown of the O&M costs.

B-38 Table B-2n:

a. Capital Costs: Is haul road construction required?

b. Please provide design information for DP-7 and EP-2.

B-39 Table B-3b: Five Year Review:

a. Is sampling the same cost as for the 10 sampling locations? Annual O&M above is lower for 3 locations versus 10 locations. Please clarify.

B-40 Table B-3c: Five Year Review:

a. Is sampling the same cost as for the 10 sampling location? Annual O&M above is lower for 3 locations versus 10 locations. Please clarify.

b. No footnote d is identified in the Table.

B-41 Table B-3d:

a. Footnote g: Is the estimate based on media replacement years 10, 20 and 3? Should this be 30?

B-42 Table B3e:

a. Excavate PRB: Does this include any ground water issue during installation or disposition of excavation spoils (contaminated)?

b. Replacement of Media: Is there any disposal cost of exchanged media? Are certain items included in the periodic media replacement costs that could be one-time capital costs: Additional Monitoring Wells, Water/Sediment Control, As-built drawings & completion report, Sampling Plan, Remedial Design and related contingency cost and $147,000/media change out. Please clarify.

c. Missing footnote called out in table notes.

B-43 Table B-4b:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Section 3.4.2 Alternative S-2 includes installing cover on DS-7, ES-4, LP-1, AP-3, DP-7 and EP-4. However, cost backup Table B-4e does not include costs for AP-3, DP-7 and EP-4. Please clarify.

c. Missing footnote c called out in table notes.

B-44 Table B-4c:

a. What is the area/acreage of Covers on Uncovered ODA? Please clarify.

b. Footnote c: How similar are the grades, slopes, and cut/fill quantities (on an acre basis)? Please clarify.

c. Footnote d: Is this the same sampling scope as WG Alternatives? Are 10 locations correct?

B-45 Table B-4d:

a. The cover estimated cost is not included in cost breakdown. Scope of work is for a 5-foot layer on uncovered areas of Panel A and Panel D. What is cost basis for cover estimate? Does the $40,542 cover all of the capital costs included in Rock Cover estimated cost? Please clarify.

b. Footnote c: How similar are the grades, slopes, and cut/fill quantities (on an acre basis)?

c. Footnote d: Is this the same sampling scope as WG Alternatives. Are 10 locations correct?

B-46 Table B-4e:

a. Section 3.4.2 Alternative S-2 includes a cover layer on AP-3, DP-7 and EP-4. Please clarify.

b. Footnotes a and j are missing from table.

B-47 Table B-4f:

a. Regrade/Compact/Strip. What is the grading effort per acre (estimated cut/fill cubic yards, compaction effort, strip (vegetation, grass, soil?)) compared to the Pole Canyon work?

b. Construct Haul Road: Please provide estimated linear feet if haul road to be constructed, estimated cut/fill, erosion control (riprap, etc.), road surfacing.

c. Haul Loose Dinwoody to Project Area: Does haul loose Dinwoody to Project Area also include cover placement to line and grade? Is there a need for a top soil layer?

d. Mobilization / Demobilization: Is this double the extended cost of WG-4? Are there the same or very similar labor and equipment resources?

e. Footnote g is missing from table.

B-48 Table B-4g:

a. Regrade/Compact/Strip. Under notes, Footnote e is missing in the bottom of the Table. It should read e: Based on cost provided by Simplot for S-4 Alternative slope prep work. Please correct omission of Footnote e.

b. What are the specifications for the Simplot haul road estimate basis? The extended haul road cost for this scope of work (360 acres) is over $5.4 million. Please clarify.

c. Haul Core Material: Please clarify this scope of work. Where is the core now and where will the stockpile be located? What is the quantity of material?

d. Haul Topsoil: The topsoil layer is not referenced in the Section 3.4.4 Scope of Work. Is this Dinwoody/SLF material loose? What is the haul route or routes for the topsoil?

e. Misc. Layers: Alternative S-4 header identifies the cover as five feet. Section 3.4.4 Alternative S-4 call for a 5-ft Dinwoody or SLF covers on uncovered area of Panel A and Panel D. Please correct Misc. Layers material and thickness in the Table.

f. Mob/Demob. Is this double the extended cost of WG-4. Same or very similar labor and equipment resources?

g. Footnote g. Missing from table.

Appendix C – Statistical Analysis of Soil Data

C-1 **Appendix C, Section 2.2, Page 3:** The outlier analysis describes a potential selenium outlier for the APL-10 sample location. The sample was removed from consideration. The Final Remedial Investigation Report stated "there are no known activities in the area of sampling location APL-10 (southeastern corner of Panel A, near the Pole Canyon ODA) that may have caused this anomalous result." APL-10 also had one of the highest selenium concentrations in terrestrial invertebrate tissue and is located in Panel A Pit A-2 which reported the highest selenium tissue concentrations of all panels for both grasses and forbs. The statistical analysis alone is not sufficient to exclude selenium concentration data from APL-10 because data from several other media confirm that the area contains elevated selenium. Note that the inclusion of the APL-10 data will require changes to several tables and associated text.

C-2 **Appendix C, Section 2.2, Page 3:** No information has been presented to justify removal of the arsenic concentration from APL-10? The APL-10 arsenic result (53.7 mg/kg) needs to be included. As with selenium at APL-10, elevated concentrations of arsenic were found in terrestrial invertebrate tissues at this location.

C-3 **Figure C-1:** Sample APL-10 needs to be added to the figure.

C-4 **Table C-1:** Arsenic (53.7 mg/kg) and selenium (245 mg/kg) results from sample APL-10 need to be added to the table.